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8 Coulmas F. Writing Systems: An Introduction to Their Linguistic Analysis (Cambridge University Press, Cambridge, 2003), 270 p.
9 Sebba M. Spelling and Society: The Culture and Politics of Orthography Around the World (Cambridge University Press, Cambridge, 2007), 196 p.
10 Haugen E. The Implementation of Corpus Planning: Theory and Practice, in Progress in Language Planning (Mouton de Gruyter, Berlin and New York, 1983), pp. 269–289. DOI: 10.1515/9783110820584.269.

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SEMANTIC FUNCTION OF ANTHROPOMETRIC MEASUREMENT UNITS IN TRANSLATION: HUMAN AND MACHINE APPROACHES

The translation of culture-specific items in literary texts remains a complex task, as these units convey not only direct meanings but also culturally embedded elements. Traditional anthropometric units are of particular interest, as they have multiple meanings and are widely used in Kazakh prose.

This study examines how the semantic function of anthropometric units influences the choice of translation techniques and compares the decisions made by professional translators and machine translation systems.

The analysis is based on a functional-semantic approach. The corpus comprises 45 examples drawn from Kazakh literary texts and their published English translations. A comparative analysis of human translation and the outputs of Google Translate, ChatGPT, and DeepL was conducted using the classification of translation techniques proposed by Molina and Hurtado Albir.

The results suggest that the choice of translation techniques largely depends on the semantic function of the unit in context. In cases of literal use, adaptation and description are more common, while phraseological and expressive meanings are rendered through generalization, reduction, and established equivalents. Human translators tend to focus on preserving the pragmatic effect, whereas machine translation systems more often rely on formal correspondences.

The study highlights the importance of semantic function as a key factor in translation and proposes a functional-semantic model to explain translation decisions. The findings can be useful for machine translation post-editing and translator training.

Key words: literary translation, semantic function, translation techniques, machine translation, culture-specific units.

MAIN PROVISIONS

In early linguistic theories of translation, equivalence was considered one of the central concepts. Translation was primarily understood as a process of interlingual transformation, in which the linguistic elements of the source text were compared with the corresponding units of the target language.

However, this approach appears limited, especially when a unit has clear cultural specificity or performs not only a nominative but also a pragmatic or figurative function in the text.

Later, translation came to be viewed not merely as a matter of linguistic equivalence but also as a communicative activity situated within a specific cultural and textual context. This perspective

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was further developed within the framework of descriptive translation studies, which examined specific translation practices and attempted to identify patterns observed in human translation decisions. From this point of view, translation emerges as the result of the interaction between textual functions, cultural factors, and target-language norms.

These developments in translation studies have led to translation being viewed as an intercultural activity. From this perspective, the translator makes decisions not only at the level of lexical correspondence but also at the level of textual function. As a result, the focus shifts from the conventional equivalent of a particular linguistic unit to its role in the structure and semantics of the text. Building on this functional perspective, the present study adopts a functional-semantic approach, according to which the choice of translation techniques depends on the semantic function of the linguistic unit in the text. In this sense, the translation process is not limited to the search for formal equivalents but is understood as a decision-making process based on interpreting the role that a given unit performs in a specific context.

Among the linguistic units that pose difficulties in translation are culturally marked units of measurement. This group includes traditional anthropometric units of measurement based on the human body.

Traditional anthropometric units in the Kazakh language include measures of length, namely *eli*, *tutam*, *qarys*, and *qulash*, as well as the distance unit *qol sozym zher*. These units, which initially served as practical measures in the everyday lives of nomadic communities, gradually acquired additional figurative meanings and are now used as expressive devices in Kazakh literary texts.

Anthropometric units can perform several semantic functions. Since their meanings directly depend on the cultural context, it is not always possible to translate them using literal equivalents. Such multifunctionality leads to semantic instability, complicating the search for precise cross-linguistic equivalents [1, 8].

In this study, semantic function is understood as the contextual role performed by a unit in the text. The semantic functions examined include literal, phraseological, metaphorical, expressive-pragmatic, and quasi-literal uses. The multilayered semantic structure of anthropometric units allows them to be classified as a “high-risk translation zone”.

Although some studies demonstrate that neural machine translation systems can accurately render individual lexical items and combinations, such as collocations, literary translation remains one of the greatest challenges for machine translation [2, 81]. The meanings of culturally marked linguistic units in literary translation are largely determined by context and by their communicative function within a particular passage. For example, in Kazakh, the anthropometric unit *eli* refers to the thickness of a finger [3, 605]. When it is used in a literal sense, it can be translated using an approximate measurement equivalent or an explanatory strategy. However, in other contexts, it may be used in a figurative or evaluative sense: *bir eli*[1]*; bir [eki] eli ajiyramady [aiyrylmady]*[2]*; auzynan bir eli tastamady*[3]*; eki eli auyzga tort [bes] eli qaqpaq*[4]*; bes eli kir*[5]. In such cases, the translation techniques selected may differ. Thus, a single unit of measurement may have multiple semantic values, which precludes the use of a single universal equivalent.

Therefore, when analyzing the translation of such units, identifying their dominant semantic function in a given text is considered a key analytical step. Depending on whether the unit is used in its literal measurement sense or performs a phraseological, metaphorical, or expressive-pragmatic function, the translator may resort to different translation techniques.

The definitions are drawn from Qazcorpus: Qazaq tiliniñ ulttyq korpysy (Kazakh National Corpus). https://qazcorpus.kz*:*

[1] bir eli – a very small amount.

[2] bir [eki] eli ajiyramady [aiyrylmady] – did not part for even a small distance; they were constantly together.

[3] auzynan bir eli tastamady – constantly talked about it; kept mentioning it.

[4] eki eli auyzga tort [bes] eli qaqpaq – to keep one’s mouth shut; to be discreet and not reveal secrets; to control one’s speech.

[5] bes eli kir – extremely dirty; heavily soiled and grimy.

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Translation studies describe various techniques for rendering culturally conditioned units, including preservation of the original form, description, functional substitution, and adaptation.

As a result, the translation of anthropometric units can be described as a sequence of decisions that includes identifying their meaning in context, determining their dominant semantic function, and selecting an appropriate translation technique. This approach serves as a theoretical basis for comparing the translation decisions made by human translators and machine translation systems in the present study.

INTRODUCTION

Researchers believe that the development of neural technologies has significantly improved the quality of machine translation and gradually expanded its scope to include literary translation [4, 94]. Recent studies have also examined the ability of such systems to render phraseological units, creative lexis, and other complex linguistic structures [5, 133; 6, 542]. Nevertheless, literary texts remain a challenging domain for machine translation [7, 187].

Despite these advances, traditional units of measurement, particularly anthropometric units such as *qarys, qulash,* and *eli*, have rarely been studied as a distinct object of translation analysis [8]. Moreover, little attention has been paid to the semantic function of these units in context and their influence on the choice of translation techniques. Importantly, differences between human and machine translation in rendering these units remain largely unexplored.

This study aims to determine how the semantic function of traditional anthropometric units in the Kazakh language affects the choice of translation techniques in literary texts. It also systematically analyzes how the relationship between semantic function and translation-technique selection differs between human and machine translation.

The novelty of the study lies in treating traditional anthropometric units as a specific type of measurement realia, taking into account their semantic function in the text, and conducting a comparative analysis of the translation solutions produced by professional translators and machine translation systems. In addition, the study proposes a functional-semantic model that systematically describes the relationship between the semantic function of a unit and the selection of translation techniques. This model makes it possible to analyze translation decisions not only in terms of their outcomes but also in terms of the underlying principles that guide them and their dependence on semantic factors.

MATERIALS AND METHODS

The research corpus consisted of examples from three works of Kazakh fiction and their English translations: Saken Zhunusov's novella Zamanai men Amanai [9; 10], Talasbek Asemkulov's novel Taltus [11; 12], and S. Yelubai's trilogy Ak boz ui [13; 14]. The corpus included all occurrences of the selected anthropometric units identified in the three literary works and their published English translations. The examples were selected according to the following criteria: the presence of an anthropometric measurement unit in the Kazakh source text, the availability of a corresponding passage in the published English translation, and the possibility of determining the unit's semantic function from the immediate context. Repeated occurrences were retained when the same unit performed different semantic functions or was translated using different techniques. Cases in which the source context or the corresponding translation was incomplete were excluded. As a result, the final corpus comprised 45 examples containing the hand-based measurement units *eli, tutam, qarys,* and *qulash*, as well as the spatial expression *qol sozym zher.* Although the research corpus was limited in size, it allowed for an in-depth qualitative analysis of context-dependent translation decisions.

A comparative analysis of traditional measurement units in human and machine translation was conducted. For each example, four translation versions were compared: the published English translation and the outputs of Google Translate, ChatGPT (OpenAI's GPT-5 mini), and DeepL. These systems were selected as widely used tools representing different technological approaches to

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automated translation. In particular, Google Translate and DeepL are neural machine translation systems, whereas ChatGPT is a generative system based on large language models. This selection allowed the translation outputs produced through different technological approaches to be compared. Each example was submitted to ChatGPT individually, without additional context or explanatory prompts. This procedure was intended to assess the systems' default translation performance and ensure the comparability of their outputs.

The same conditions were maintained for all machine translation systems: the source text was provided in Kazakh and translated directly into English without additional explanations. This made it possible to compare how the different systems interpreted the same input.

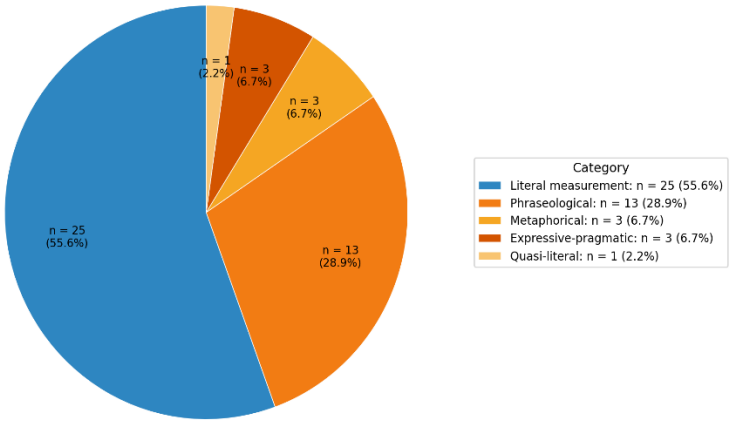
The translation solutions were categorized using the classification of translation techniques proposed by L. Molina and A. Hurtado Albir, including literal translation, reduction, adaptation, description, discursive creation, established equivalent, generalization, borrowing, amplification, calque, and modulation [14, 509–511]. Each example was first classified according to its dominant semantic function: literal measurement, phraseological, metaphorical, expressive-pragmatic, or quasi-literal. The published translation and the three machine-generated translations were then analyzed separately using the classification proposed by Molina and Hurtado Albir. One dominant translation technique was assigned to each translation solution on the basis of its function in context. In potentially ambiguous cases, the technique that best described the main transformation between the source expression and its English rendering was selected. To promote consistency, the same classification criteria were applied to all 45 examples.

In addition to identifying the dominant translation technique, each translation solution was evaluated according to three criteria: (1) semantic accuracy, defined as the preservation of the contextual meaning of the source expression; (2) functional adequacy, defined as the preservation of its dominant semantic and pragmatic function; and (3) target-language acceptability, defined as the grammatical correctness and contextual naturalness of the English rendering. Each criterion was assigned one point when it was satisfied and zero points when it was not satisfied. Thus, each translation solution received a total score ranging from 0 to 3. A score of 3 was classified as high performance, a score of 2 as medium performance, and a score of 0 or 1 as low performance. For each translation system and semantic-function category, the overall performance level presented in Table 4 was determined on the basis of the most frequently occurring rating among the examples in that category.

RESULTS

The distribution of anthropometric units according to their semantic function is shown in Figure 1. Of the 45 examples included in the corpus, 25 (55.6%) represent literal measurement uses denoting length, thickness, or depth. The remaining 20 examples (44.4%) comprise 13 phraseological uses (28.9%), three metaphorical uses (6.7%), three expressive-pragmatic uses (6.7%), and one quasi-literal use (2.2%).

Figure 1 – Distribution of anthropometric units according to semantic function (n = 45)



Note: Percentages may not total exactly 100% due to rounding.

The comparison of the four translation versions made it possible to identify the main patterns in the rendering of traditional measurement units in human and machine translation. The distinction between literal and figurative uses is analytically important, as the translation techniques employed in these categories differ significantly. This difference supports the functional-semantic approach proposed in the theoretical section, according to which the choice of translation techniques depends on the semantic function performed by the unit in text. Accordingly, Table 1 presents the frequency of the translation techniques identified in the corpus.

DISCUSSION

Table 1 presents the frequency of the translation techniques used in the corpus. Human translators tend to prioritize the pragmatic meaning of the source text, whereas machine translation systems more often preserved the form of the measurement unit or used approximate equivalents available in the target language. Table 2 summarizes the relationship between semantic function and the preferred translation techniques observed in human and machine translation.

Table 1 – Distribution of translation techniques

№	Technique	Human	Google Translate	ChatGPT	DeepL
1	Reduction	16	3	1	2
2	Adaptation	9	0	0	1
3	Established equivalents	8	18	23	18
4	Literal translation	3	0	0	0
5	Description	3	1	6	1
6	Generalization	3	6	1	5
7	Discursive creation	1	11	0	6
8	Borrowing + amplification	1	0	0	0
9	Modulation	1	5	6	9
10	Calque	0	1	8	3

Table 2 – Preferred translation techniques according to semantic function

Semantic function	Human translation	Google Translate	ChatGPT	DeepL
literal measurement use	adaptation, reduction, description	established equivalent, modulation	description, established equivalent	modulation, established equivalent

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phraseological/metaphorical use	established equivalent, reduction	generalization, discursive creation	calque, modulation	established equivalent, modulation
expressive-pragmatic use	reduction, modulation	generalization	established equivalent, calque	modulation, discursive creation

Table 1 shows a distinctive pattern: the *reduction* technique was used in sixteen out of the forty-five examples. This may suggest that the translator relied on this strategy to preserve the stylistic norms of English rather than treating traditional units of measurement as key elements of the semantic structure of the source text. At the same time, the techniques of *adaptation* and *established equivalent* were also frequently used. These techniques helped to convey the general meaning without preserving the exact form of the traditional measurement units. Overall, human translators tended to prioritize the pragmatic and stylistic functions of the units over the preservation of their formal measurement value.

The pattern observed in machine translation systems was different. In the ChatGPT translations, the most frequently used technique was *established equivalent,* which occurred in 23 examples. When this technique was used, traditional Kazakh measurement units were rendered using culturally familiar English units such as *cubit*, *fathom*, or *handspan*. However, these translations were not always accurate. For example, the unit ***qarys*** was translated as ***cubit*** in several cases. However, the two units differ in length: ***qarys*** is defined as the distance between the thumb and the middle finger [15, IX, 408], whereas a ***cubit*** is the length of the arm from the elbow to the tip of the middle finger (Encyclopaedia Britannica[6], n.d.). In other words, the system tended to match an anthropometric unit with a culturally or metrically similar unit rather than taking its specific semantic function into account.

The translation decisions produced by *Google Translate* followed a different pattern. The most frequently used technique was an established equivalent, which was applied in eighteen cases. This indicates that, in the analyzed corpus, the system tended to weaken the cultural specificity of traditional measurement units or omit their cultural markers altogether. In such cases, the system conveyed meaning mainly through conventional or generalized equivalents rather than by preserving the specific semantic features of the source unit.

DeepL demonstrated a mixed pattern in its use of translation techniques. Established equivalent, modulation, and discursive creation were used with almost equal frequency. In this case, the system tended to preserve the measurement semantics of these units as much as possible. Compared with ChatGPT, DeepL more often produced contextually appropriate equivalents for units used in their literal measurement sense. Overall, this shows that the translation of anthropometric units of measurement depends not only on linguistic but also on cultural and semantic factors.

Whether a unit is used literally or figuratively has a direct impact on translation decisions. In the published human translations, figurative uses were rendered through *generalization, reduction*, or *the established equivalent*, allowing the pragmatic meaning of the unit to be preserved rather than its literal measurement value. For example, the phrase *qol sozym zher* denotes a short distance. In the human translations, it was rendered as *close* or *nearby*. These renderings preserved the general meaning of the expression but did not retain its anthropometric form.

The translation decisions of the selected machine translation systems showed different patterns in the use of translation techniques. Units used in a literal sense were often rendered through *generalization* or through *an established equivalent*. The rare use of the *reduction* technique may partly explain the frequent occurrence of mistranslations. In general, these systems did not clearly distinguish between the different semantic functions of anthropometric units. Consequently, they tended to rely on formal or generalized equivalents, often failing to recognize figurative meanings in the text.

[6] **Encyclopaedia Britannica. (n.d.). Cubit.** Retrieved March 5, 2026, from https://www.britannica.com/science/cubit

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The analysis also shows that translating anthropometric units used figuratively is more complex than translating those used in their literal sense (see Table 3). Their meaning is embedded in culturally marked phraseological expressions, where the connection to physical measurement is no longer transparent.

Table 3. Translation of figurative anthropometric expressions

№	Source Text (Kazakh)	Published English translation	Google Translate	ChatGPT **(GPT-5 mini**; 4 March 2026, 10:00 a.m.)	DeepL
1	… күдікті Есеттің қасынан бір елі қалмаған.	…kept close …never letting him out of his sight…	…no matter where they were…	…even by a single inch…	…never left the suspicious Eset's side for a moment…
2	әлденеден қорыққандай бір елі қалмай	keep closer… almost stepping on her heels…	…as if afraid of something, kept running away from her…	… as if frightened by something, did not move a single step away from her.	…as if frightened of something, would not let a single step fall behind her.
3	Баламның мандайының соры бес елі…	There's bad luck five fingers deep…	The five countries of the world…	…the misfortune on my son's brow is five fingers thick…	My child's forehead is a good five fingers wide…
4	…жарты қарыс ауыздай…	–	…half-open mouth…	… a mouth nearly half a span wide…	…his mouth was half-carved...
5	… бесатардың дүмімен құлаштап сілтеді.	…waving the rifle…	waved his hand with the tail of a besatar.	…swung the five-pronged tool with a full cubit's sweep.	…swung his shotgun in a wide arc.
6	… құлаштап ішіп отырып…	Greedily gulping down…	… sipping his tea…	… drinking a full cubit of dark tea…	… gulping down his tea,…
7	…екеуін де қолы қысқа кедей етіп…	… lived all their lives in poverty, barely making ends meet.	…left both of them penniless and poor…	…made both of them poor and powerless…	…made both of them poor and short-handed…

Table 3 shows that figurative anthropometric expressions are much more difficult for machine translation systems than units used in their literal meaning. In many examples, the systems attempted to preserve the lexical or anthropometric component of the expression, although in the source text the unit already functions in a figurative or phraseological sense.

Human translators generally focused more on the pragmatic meaning of the expression and the naturalness of the English sentence. Because of this, anthropometric imagery was often omitted or replaced with more idiomatic English equivalents. For example, the expression *bir eli qalmagan* was translated as "never letting him out of his sight," while *qoly qysqa* was rendered as "barely making ends meet." In these examples, the translator preserved the communicative meaning rather than the literal image connected with body-based measurement.

Machine translation systems showed another tendency. ChatGPT often preserved the anthropometric image through literal or calque-like renderings such as "even by a single inch" or "a full cubit's sweep." Grammatically, such translations may seem acceptable, but in English they sound unnatural because the original expressions are used idiomatically, not literally.

Google Translate more often produced semantic distortion or excessive generalization. In some cases, the system did not recognize the figurative meaning at all. For instance, the expression *bes eli* becomes "five countries of the world," which completely changed the meaning of the original text. DeepL generally produced more coherent translations than Google Translate, although it also tended to preserve formal lexical correspondences in figurative contexts.

In general, the examples in Table 3 show that machine translation systems frequently processed anthropometric expressions on the basis of direct lexical correspondence without fully identifying

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their semantic function in context. Because of this, translation techniques that may work for a literal measurement meaning often become ineffective when the expression performs a phraseological, metaphorical, or expressive-pragmatic function in the literary text.

The analysis further indicates that figurative anthropometric expressions often lose their direct connection with physical measurement. In literary texts, such units function not only as indicators of size or distance but also as expressive and culturally marked elements of narration. Because of this, their meaning cannot always be understood from separate lexical components alone.

This is especially visible in phraseological expressions conveying proximity, emotional evaluation, or intensification. For example, expressions such as *bir eli qalmagan* or *qol sozym zher* no longer describe objective physical distance in precise terms. Instead, they convey emotional closeness, immediacy, or a psychological perception of space. In the analyzed examples, human translators generally interpreted such expressions according to their communicative role in context and chose idiomatic English equivalents that preserve the pragmatic effect of the original passage.

In the analyzed examples, machine translation systems often processed these expressions compositionally. In other words, the systems identified separate lexical elements associated with body-based measurement and attempted to reproduce them directly in English. As a result, the translation may preserve the formal structure of the phrase while failing to reproduce its actual semantic function in the literary context.

Some examples also show that the preservation of anthropometric imagery itself does not always guarantee the adequacy of the translation. In several ChatGPT translations, the body-based metaphor remained visible through words such as cubit, inch, or handspan, but the resulting English phrases sounded artificial or stylistically unusual. This happens because English phraseological norms do not always allow direct preservation of such imagery. Human translators therefore tended to omit the formal anthropometric component in order to preserve fluency and narrative naturalness.

At the same time, the analysis demonstrates that machine translation systems performed more successfully when anthropometric units were used in a literal measurement sense. In such cases, the semantic connection between the unit and physical measurement remains transparent, which makes the selection of approximate equivalents easier. Figurative and expressive uses, by contrast, require the interpretation not only of lexical meaning but also of stylistic and pragmatic functions. This remains one of the major difficulties for machine translation in literary texts.

Thus, the analysis confirms that anthropometric units should be viewed not simply as measurement terms but as culturally embedded semantic structures whose translation depends heavily on contextual interpretation. The choice of translation technique therefore cannot be reduced to lexical equivalence alone, especially in cases where the unit performs a phraseological, metaphorical, or expressive-pragmatic function.

Taken together, these observations indicate that semantic function plays a key role in the selection of translation techniques. Traditional units of measurement used in the literal sense were often rendered through *adaptation* or *description,* whereas figurative expressions were more frequently rendered through an *established equivalent, generalization, or reduction*. Anthropometric units thus function not only as measures but also as culturally embedded semantic markers.

Table 4. Overall translation performance according to semantic function

№	Semantic function	Human translation	Google Translate	ChatGPT	DeepL	Main translation challenge
1	Literal measurement	High	Medium	High	High	Selection of an appropriate cultural equivalent
2	Phraseological / metaphorical	High	Low	Medium	Medium	Literal rendering of

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						idiomatic meaning
3	Expressive-pragmatic	High	Low	Medium	Medium	Preservation of pragmatic and stylistic effect

Note: Performance levels were assigned according to a three-point assessment comprising semantic accuracy, functional adequacy, and target-language acceptability: High = 3 criteria satisfied; Medium = 2 criteria satisfied; Low = zero or one criterion satisfied. The overall level for each semantic-function category represents the most frequently occurring rating among the examples included in that category. Phraseological and metaphorical uses are combined in this table; the single quasi-literal example is excluded from the aggregate comparison.

Table 4 summarizes the overall performance levels of human and machine translation across the three broader semantic-function groups used for comparative purposes. The levels were assigned on the basis of three criteria: semantic accuracy, functional adequacy, and target-language acceptability. The reported level represents the rating most frequently observed among the examples belonging to each semantic-function group.

Literal measurement uses generally received higher performance ratings because the relationship between the anthropometric unit and physical measurement remained relatively transparent. This made it easier to select an approximate measurement or culturally recognizable equivalent. Phraseological, metaphorical, and expressive-pragmatic uses received lower ratings in machine translation because their interpretation required recognition of idiomatic meaning, pragmatic force, and stylistic function rather than direct lexical correspondence.

Human translations were predominantly rated as high because they generally preserved the communicative function and target-language naturalness of the expressions, even when the original anthropometric image was omitted. Machine translation systems showed more variable results: their outputs were more frequently rated as medium or low in phraseological, metaphorical, and expressive-pragmatic contexts because of literal renderings, semantic distortions, or excessive generalization.

The comparison presented in Table 4 supports the functional-semantic approach adopted in this study. The results indicate that adequate translation depends not only on lexical correspondence but also on the preservation of contextual meaning, semantic function, and target-language acceptability.

Figure 2 – Decision-making process for translating anthropometric units

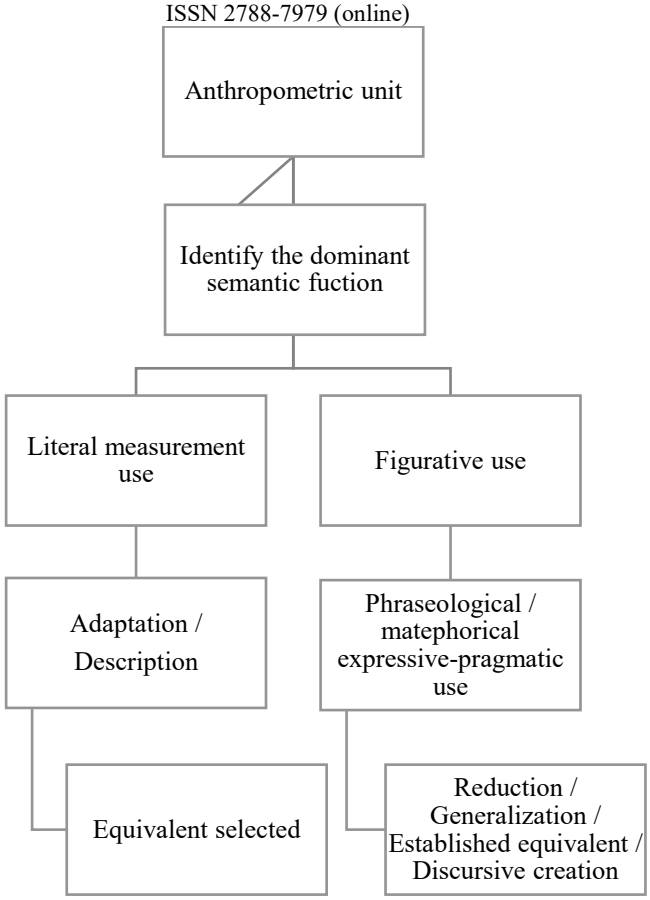
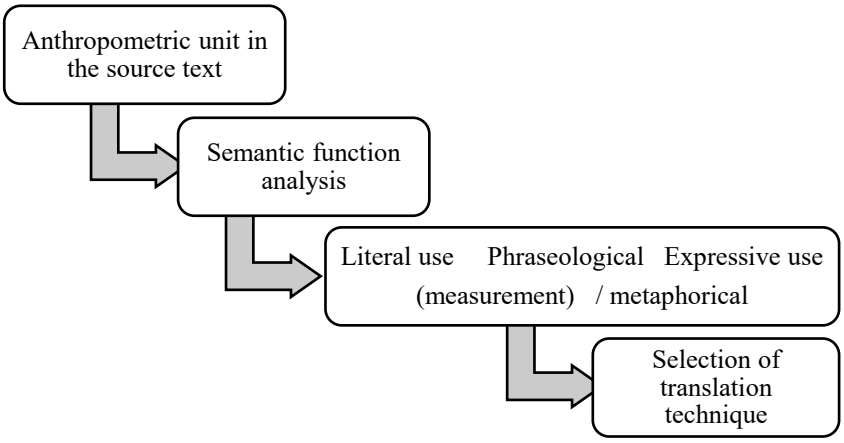


Figure 2 illustrates the sequence of decisions involved in translating anthropometric units. The process begins with identifying the semantic function of the unit within its context. If the unit is used in its literal measurement sense, translation techniques such as adaptation, description, or an established equivalent may be selected. If the unit performs a phraseological or expressive function, the translator focuses primarily on preserving its communicative effect through techniques such as reduction, generalization, established equivalent, or discursive creation. The model summarizes the functional-semantic approach proposed in this study and demonstrates that the choice of translation technique is largely guided by contextual interpretation rather than formal lexical correspondence.

Figure 3 – Model of translation technique selection based on the semantic function of anthropometric units



The results of the analysis make it possible to identify several recurrent difficulties in the translation of anthropometric units of measurement. The first challenge involves selecting an

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appropriate equivalent in the target language for units used in their literal measurement meaning. Second, when such units appear in phraseological structures, the translator needs to convey their pragmatic meaning rather than their literal value. Third, units of measurement with expressive or hyperbolic meaning function as semantic intensifiers, and their literal translation may distort the stylistic effect of the text.

Based on the analysis, a functional-semantic translation model can be proposed that describes the decision-making process in the translation of anthropometric units, as shown in Figure 3. It reflects the internal logic of translation decisions. This approach makes it possible to systematize the observed translation patterns and to explain the structural nature of differences between human and machine translation. The proposed model systematically describes the relationship between the semantic function of a unit and the selection of translation techniques. In addition, this relationship is more consistently reflected in human translation, whereas it is not always evident in machine-generated translations. This points to certain limitations in the ability of these systems to account for semantic function. According to the model, when a unit is used in its literal measurement sense, techniques such as *adaptation, description,* or *established equivalent* are generally the most appropriate. If the unit is part of a phraseological or metaphorical structure, the translation focuses on conveying the expression's pragmatic meaning and is often carried out using *discursive creation, generalization, or reduction* techniques. In expressive contexts, where an anthropometric unit functions as a means of enhancing the imagery and stylistic impact of the text, the translation technique should be selected with the aim of preserving this effect. Thus, the proposed model allows the selection of translation techniques in the translation of anthropometric units to be described within a systematic framework that reflects the tendencies observed in the analyzed corpus.

CONCLUSION

Overall, the results support treating semantic function as an organizing principle in explaining the translation of anthropometric units and show that it is reflected differently in human and machine translation. The findings lead to the following three main conclusions:

1) There are clear differences between human and machine translation techniques. While human translators may omit the unit of measurement to produce more natural-sounding English, machine translation systems tend to preserve the anthropometric image or measurement meaning, often using analogues or more generalized equivalents.

2) AI-generated translations show a recurrent tendency to use cultural analogues. Translations produced by ChatGPT show a marked tendency to render traditional Kazakh units of measurement using cultural analogues in English. This approach may create an impression of equivalence between body-based units across different cultures, although their semantic and historical parameters may not coincide.

3) Machine translation systems tend to rely on formal, literal, or generalized correspondences without consistently recognizing the semantic function of anthropometric units in context. Google Translate and DeepL frequently employ generalization, which may result in the loss of the specific measurement characteristics of the source expression. In phraseological, metaphorical, and expressive-pragmatic contexts, machine-generated translations may also preserve formal lexical components while failing to convey the intended idiomatic meaning or pragmatic effect.

The theoretical contribution of the study lies in demonstrating that the semantic function is a major factor influencing the translation of anthropometric units. The analysis indicates that the choice of translation technique is not random but is closely related to the function performed by the unit in context.

In addition, the study proposes a comparative analysis model that applies a functional-semantic approach to the comparison of human and machine translation systems. This approach makes it possible to analyze not only translation outcomes but also the underlying logic of translation decisions.

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The findings can be situated within the major theoretical approaches to translation. Scholars working within linguistic theories of translation, including E. Nida, J. Catford, and R. Jakobson, interpret translation primarily in terms of equivalence and structural correspondence between linguistic units. However, such an approach to translating culturally and semantically complex units, such as anthropometric units, does not always produce adequate results.

This is because such units contain not only linguistic but also cultural and semantic information. Descriptive and functional approaches, by contrast, explain translation decisions in relation to the function of the unit, the textual context, cultural factors, and communicative purpose. From this perspective, the findings show that, when translating anthropometric units, the translator's choices largely depend on their semantic function.

In addition, given the widespread use of artificial intelligence and machine translation in contemporary practice, the importance of pre-translation analysis and post-editing are becoming increasingly important in the treatment of culturally complex units. In particular, considering their semantic function facilitates the selection of effective strategies for evaluating and post-editing machine translation outputs.

Thus, the translation of traditional anthropometric units is not merely a matter of linguistic equivalence. It is a complex task that requires the interpretation of their semantic and pragmatic functions in context and a systematic approach to their rendering.

AI tools disclosure

ChatGPT, DeepL, and Google Translate were used in this study for comparative analysis of machine translation outputs. The translations generated by these AI systems constituted part of the research material analyzed by the authors. All analytical interpretations and conclusions presented in the article were made by the authors.

REFERENCES

1 Chen L., Varga L., Mehdizadkhani M. Taming AI for The Little Prince: A comparative analysis of NMTs and LLMs in Hungarian translation // Humanities and Social Sciences Communications. – 2026. – Vol. 13. – Art. 46. – DOI: 10.1057/s41599-025-06343-0.

2 Ibáñez Moreno A., Domínguez Mora M. E. Google Translate versus DeepL in the Spanish to English translation of Don Quixote // Translation and Translanguaging in Multilingual Contexts. – 2025. – Vol. 11, № 1. – P. 65–87. – DOI: 10.1075/ttmc.00154.iba.

3 Qaıdar Ä. Qazaqtar ana tılı äleminde: Etnolingvistikalyq sözdik. 2-tom: Qoğam [Kazakhs in the world of the native language: Ethnolinguistic dictionary]. – Almaty: Sardar baspa üi, 2013. [in Kazakh]

4 Way A., Rothwell A., Youdale R. Why more literary translators should embrace translation technology // Revista Tradumàtica: Tecnologies de la Traducció. – 2023. – № 21. – P. 87–102. – DOI: 10.5565/rev/tradumatica.344.

5 Noriega-Santiáñez L., Corpas Pastor G. Measuring creative phraseology in literature: Machine translation systems versus large language models // Yearbook of Phraseology. – 2025. – Vol. 16, № 1. – P. 125–152. – DOI: 10.1515/phras-2025-0006.

6 Kolb W., Dressler W. U., Mattiello E. Human and machine translation of occasionalisms in literary texts: Johann Nestroy's Der Talisman and its English translations // Target. – 2023. – Vol. 35, № 4. – P. 540–572. – DOI: 10.1075/target.21147.kol.

7 Guerberof-Arenas A., Toral Ruiz A. Creativity in translation: Machine translation as a constraint for literary texts // Translation Spaces. – 2022. – Vol. 11, № 2. – P. 184–212. – DOI: 10.1075/ts.21025.gue.

8 Zhunusov S. Zamanai men Amanai: Hikayat. – 2025. [in Kazakh]

9 Zhunusov S. Amanai and Zamanai / trans. S. Geoghegan; ed. S. Hollingsworth. – Pen-club, 2018.

ISSN 2788-7979 (online)
10 Asemkulov T. Taltüs [Midday]. – Almaty: Otuken, 2012, available at: URL: https://otuken.kz/3-2/ [in Kazakh]
11 Asemkulov T. A life at noon / trans. S. Fairweather-Vega. – KazHeritage, 2018.
12 Elubai S. Aq boz üi [The White Yurt]. – Almaty: Zhazushy, 2005. [in Kazakh]
13 Yelubay S. Lonely yurt. – Metropolitan Classics Press, 2016.
14 Molina L., Hurtado Albir A. Translation techniques revisited: A dynamic and functionalist approach // Meta: Translators' Journal. – 2002. – Vol. 47, № 4. – P. 498–512. – DOI: 10.7202/008033ar.
15 Qazaqstan Respublikasy Mädenïet ministrligi. Qazaq ädebï tiliniñ sözdigi (15 tomdyq, 9-tom) [Dictionary of the Kazakh literary language]. – Almaty: Arıs baspasy, 2011. [in Kazakh]

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Антропометриялық өлшем бірліктердің аудармадағы семантикалық қызметі: адам және машина тәсілдері

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Көркем мәтіндердегі мәдени реңкті тілдік бірліктерді аудару әлі күнге дейін күрделі міндеттердің бірі ретінде танылуда. Себебі мұндай бірліктер тек тікелей өлшемдік мағынаны ғана емес, сонымен қатар мәдени тұрғыдан шартталған мәндерге де ие болады. Осы тұрғыда көп мағынаға ие және қазақ көркем әдебиетінде кеңінен қолданылатын дәстүрлі антропометриялық өлшем бірліктер аудармасы ерекше қызығушылық тудырады.

Аталған зерттеу антропометриялық бірліктердің семантикалық функциясы аударма техникаларын таңдауға қалай әсер ететінін анықтауға, сондай-ақ кәсіби аудармашылар мен машиналық аударма жүйелері қабылдайтын шешімдерді салыстыруға бағытталған.

Зерттеу функционалды-семантикалық тәсілге негізделген. Корпус ретінде қазақ көркем мәтіндерінен және олардың ағылшын тіліндегі аудармаларынан алынған 45 мысал қарастырылды. Молина мен Уртадо Альбир ұсынған аударма техникаларының жіктемесі негізінде адам аудармасы мен Google Translate, ChatGPT және DeepL жүйелерінің нәтижелеріне салыстырмалы талдау жүргізілді.

Нәтижелер аударма техникаларын таңдау көп жағдайда бірліктің мәтіндегі семантикалық функциясына тәуелді екенін көрсетеді. Тура мағынадағы қолданыста көбінесе бейімдеу мен сипаттау тәсілдері қолданылса, фразеологиялық және экспрессивтік мағыналар генерализация, редукция және қалыптасқан баламалар арқылы беріледі. Кәсіби аудармашылар, әдетте, прагматикалық әсерді сақтауға ұмтылады, ал машиналық аударма жүйелері көбіне шартты сәйкестіктерге сүйенеді.

Зерттеу семантикалық функцияның аудармадағы негізгі фактор ретіндегі маңызын айқындап, аударма шешімдерінің логикасын түсіндіретін функционалды-семантикалық модель ұсынады. Алынған нәтижелер машиналық аударманы постредакциялау барысында және аудармашыларды даярлауда қолданылуы мүмкін.

Кілт сөздер: көркем аударма, семантикалық функция, аударма техникалары, машиналық аударма, мәдени-реңкті бірліктер.

ӘДЕБИЕТТЕР ТІЗІМІ

1 Chen L., Varga L., Mehdizadkhani M. Taming AI for The Little Prince: A comparative analysis of NMTs and LLMs in Hungarian translation // Humanities and Social Sciences Communications. – 2026. – Vol. 13. – Art. 46. – DOI: 10.1057/s41599-025-06343-0.

2 Ibáñez Moreno A., Domínguez Mora M. E. Google Translate versus DeepL in the Spanish to English translation of Don Quixote // Translation and Translanguaging in Multilingual Contexts. – 2025. – Vol. 11, № 1. – P. 65–87. – DOI: 10.1075/ttmc.00154.iba.
3 Қайдар Ә. Қазақтар ана тілі әлемінде: этнолингвистикалық сөздік. 2-т. Қоғам. – Алматы: Сардар баспа үйі, 2013.
4 Way A., Rothwell A., Youdale R. Why more literary translators should embrace translation technology // Revista Tradumàtica: Tecnologies de la Traducció. – 2023. – № 21. – P. 87–102. – DOI: 10.5565/rev/tradumatica.344.
5 Noriega-Santiáñez L., Corpas Pastor G. Measuring creative phraseology in literature: Machine translation systems versus large language models // Yearbook of Phraseology. – 2025. – Vol. 16, № 1. – P. 125–152. – DOI: 10.1515/phras-2025-0006.
6 Kolb W., Dressler W. U., Mattiello E. Human and machine translation of occasionalisms in literary texts: Johann Nestroy's Der Talisman and its English translations // Target. – 2023. – Vol. 35, № 4. – P. 540–572. – DOI: 10.1075/target.21147.kol.
7 Guerberof-Arenas A., Toral Ruiz A. Creativity in translation: Machine translation as a constraint for literary texts // Translation Spaces. – 2022. – Vol. 11, № 2. – P. 184–212. – DOI: 10.1075/ts.21025.gue.
8 Жүнісов С. Заманай мен Аманай: хикаят. – 2025.
9 Zhunusov S. Amanai and Zamanai / trans. S. Geoghegan; ed. S. Hollingsworth. – Pen-club, 2018.
10 Әсемқұлов Т. Талтүс – Алматы: Otuken, 2012. – URL: https://otuken.kz/3-2/
11 Asemkulov T. A life at noon / trans. S. Fairweather-Vega. – KazHeritage, 2018.
12 Елубай С. Ақ боз үй. – Жазушы, 2005.
13 Yelubay S. Lonely yurt. – Metropolitan Classics Press, 2016.
14 Molina L., Hurtado Albir A. Translation techniques revisited: A dynamic and functionalist approach // Meta: Translators' Journal. – 2002. – Vol. 47, № 4. – P. 498–512. – DOI: 10.7202/008033ar.
15 Қазақстан Республикасы Білім және ғылым министрлігі, А. Байтұрсынұлы атындағы Тіл білімі институты. Қазақ әдеби тілінің сөздігі: 15 томдық, 9-т. – Алматы: Арыс баспасы, 2011.

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Семантические функции антропометрических единиц измерения в переводе: человеческий и машинный подходы

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Перевод культурно-специфических единиц в художественных текстах остаётся сложной задачей, поскольку такие единицы передают не только прямое значение, но и культурно обусловленные смыслы. Особый интерес представляют традиционные антропометрические единицы, обладающие многослойной семантикой и широко используемые в казахской литературе.

Настоящее исследование направлено на выявление того, каким образом семантическая функция антропометрических единиц влияет на выбор переводческих техник, а также на сопоставление решений, принимаемых профессиональными переводчиками и системами машинного перевода.

Исследование основано на функционально-семантическом подходе. Материал включает 45 примеров, отобранных из казахских художественных текстов и их английских переводов. Проведён сравнительный анализ переводов, выполненных профессиональным переводчиком, а также результатов работы систем Google Translate, ChatGPT и DeepL с использованием классификации переводческих техник, предложенной Молиной и Уртадо Альбир.

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Результаты показывают, что выбор переводческих техник в значительной степени зависит от семантической функции единицы в контексте. При буквальном употреблении чаще используются адаптация и описание, тогда как фразеологические и экспрессивные значения передаются с помощью генерализации, редукции и установившихся соответствий. Профессиональные переводчики, как правило, ориентируются на сохранение прагматического эффекта, в то время как системы машинного перевода чаще опираются на формальные соответствия.

В работе подчёркивается значимость семантической функции как ключевого фактора перевода и предлагается функционально-семантическая модель, объясняющая логику переводческих решений. Полученные результаты могут быть использованы при постредактировании машинного перевода и в подготовке переводчиков.

Ключевые слова: художественный перевод, семантическая функция, переводческие приёмы, машинный перевод, культурно-специфические единицы.

СПИСОК ЛИТЕРАТУРЫ

1 Chen L., Varga L., Mehdizadkhani M. Taming AI for The Little Prince: A comparative analysis of NMTs and LLMs in Hungarian translation // Humanities and Social Sciences Communications. – 2026. – Vol. 13. – Art. 46. – DOI: 10.1057/s41599-025-06343-0.

2 Ibáñez Moreno A., Domínguez Mora M. E. Google Translate versus DeepL in the Spanish to English translation of Don Quixote // Translation and Translanguaging in Multilingual Contexts. – 2025. – Vol. 11, № 1. – P. 65–87. – DOI: 10.1075/ttmc.00154.iba.

3 Қайдар Ә. Қазақтар ана тілі әлемінде: этнолингвистикалық сөздік. 2-т. Қоғам. – Алматы: Сардар баспа үйі, 2013.

4 Way A., Rothwell A., Youdale R. Why more literary translators should embrace translation technology // Revista Tradumàtica: Tecnologies de la Traducció. – 2023. – № 21. – P. 87–102. – DOI: 10.5565/rev/tradumatica.344.

5 Noriega-Santiáñez L., Corpas Pastor G. Measuring creative phraseology in literature: Machine translation systems versus large language models // Yearbook of Phraseology. – 2025. – Vol. 16, № 1. – P. 125–152. – DOI: 10.1515/phras-2025-0006.

6 Kolb W., Dressler W. U., Mattiello E. Human and machine translation of occasionalisms in literary texts: Johann Nestroy's Der Talisman and its English translations // Target. – 2023. – Vol. 35, № 4. – P. 540–572. – DOI: 10.1075/target.21147.kol.

7 Guerberof-Arenas A., Toral Ruiz A. Creativity in translation: Machine translation as a constraint for literary texts // Translation Spaces. – 2022. – Vol. 11, № 2. – P. 184–212. – DOI: 10.1075/ts.21025.gue.

8 Жүнісов С. Заманай мен Аманай: хикаят. – 2025.

9 Zhunusov S. Amanai and Zamanai / trans. S. Geoghegan; ed. S. Hollingsworth. – Pen-club, 2018.

10 Әсемқұлов Т. Талтүс – Алматы: Otuken, 2012. – URL: https://otuken.kz/3-2/

11 Asemkulov T. A life at noon / trans. S. Fairweather-Vega. – KazHeritage, 2018.

12 Елубай С. Ақ боз үй. – Жазушы, 2005.

13 Yelubay S. Lonely yurt. – Metropolitan Classics Press, 2016.

14 Molina L., Hurtado Albir A. Translation techniques revisited: A dynamic and functionalist approach // Meta: Translators' Journal. – 2002. – Vol. 47, № 4. – P. 498–512. – DOI: 10.7202/008033ar.

15 Қазақстан Республикасы Білім және ғылым министрлігі, А. Байтұрсынұлы атындағы Тіл білімі институты. Қазақ әдеби тілінің сөздігі: 15 томдық, 9-т. – Алматы: Арыс баспасы, 2011.

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